

**REMARKS**

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the Office Action of February 6, 2006 the following actions were taken:

- (1) The Examiner acknowledged the Applicant's election of Group I, claims 1-22;
- (2) Claims 1-13 and 15-22 were provisionally rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1-6, 8, 15-22 of copending Application No. 11/257,960;
- (3) Claim 14 was provisionally rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims of copending Application No. 11/257,960 in view of U.S. Pat. No. 3,007,878 (hereinafter "Alexander");
- (4) Claims 1-22 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Pat. No. 6,203,899 (hereinafter "Hirose") in view of U.S. Pat. No. 5,372,884 (hereinafter "Abe") and Alexander, further in view of U.S. Pat. No. 5,965,252 (hereinafter "Santo").

It is respectfully submitted that the presently pending claims be allowed based on the remarks below.

**Double Patenting**

The Examiner has provisionally rejected claims 1-13 and 15-22 under the judicially created doctrine of double patenting over Applicant's copending U.S. Patent Application serial no. 11/257,960. Without conceding the correctness of the rejection and for the sole purpose of advancing prosecution in the present application, Applicant has enclosed herewith a terminal disclaimer disclaiming the terminal portion of the patent issuing from the present application which extends beyond that of any patent to issue from U.S. Patent Application serial no. 11/257,960. Applicant submits that such terminal disclaimer renders the issue of double patenting moot and therefore requests that this rejection be withdrawn.

The Examiner has provisionally rejected claim 14 under the judicially created doctrine of double patenting over Applicant's copending U.S. Patent Application serial no. 11/257,960 in view of Alexander. Without conceding the correctness of the rejection and for the sole purpose of advancing prosecution in the present application, Applicant has enclosed

herewith is a terminal disclaimer disclaiming the terminal portion of the patent issuing from the present application which extends beyond that of any patent to issue from U.S. Patent Application serial no. 11/257,960. Applicant submits that such terminal disclaimer renders the issue of double patenting moot and therefore requests that this rejection be withdrawn.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 1-22 U.S.C. § 103(a) as being unpatentable over several references.

The issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness. In order to maintain a *prima facie* case of obviousness by combining references, the prior art must provide some reason or motivation to make the claimed compositions. *In re Dillon*, 16 U.S.P.Q.2d 1897, 1901 (Fed. Cir. 1990). As aptly stated in *In re Jones*, 21 U.S.P.Q.2d 1941, 1943-44 (Fed. Cir. 1992):

"Before the PTO may combine the disclosure of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art...Conspicuously missing from this record is any *evidence*, other than the PTO's speculation (if it be called evidence) that one of ordinary skill in the...art would have been motivated to make the modifications of the prior art necessary to arrive at the claimed (invention)."

It has been widely recognized that virtually every invention is a combination of elements and that most, if not all, of these will be found somewhere in an examination of the prior art. This reasoning lead the court, in *Connell v. Sears, Roebuck & Co.*, 220 U.S.P.Q. 193, 199 (Fed. Cir. 1983) to state:

"...it is common to find elements or features somewhere in the prior art. Moreover, most if not all elements perform their ordained and expected function. The test is whether the claimed invention as a whole, in light of all the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made." (underlining added)

*In re Sernaker*, 217 U.S.P.Q. 1, 5-6, (Fed. Cir. 1983) states a test to determine whether a rejection of an invention based on a combination of prior art elements is appropriate as follows:

"The lesson of this case appears to be that prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings...The board never showed how the teaching of the prior art could be combined to make the invention." (underlining added)

With the above background in mind, the Applicant contends that a *prima facie* case of obviousness with respect to pending claims has not been met. Specifically, the references do not provide sufficient teachings or motivation to be modified or combined in order to arrive at Applicant's invention. Further, Applicant contends that the combination of references is based on hindsight. Therefore, without knowledge of the disclosure of the present invention, one of ordinary skill in the art would not be able to make the combinations proposed to arrive at the claimed invention.

Emphasis on the independent claims is provided herein, as the Applicant asserts that these claims are all patentably distinct over the prior art. Specifically, the Examiner has rejected claims 1-22 as being obvious in view various combinations of prior art, each of which includes the following references: Hirose, Abe, Alexander, and Santo. Thus, a brief discussion of the these references is believed to be in order.

#### *Hirose*

Hirose discloses a printing medium containing a liquid-absorbent base material; an ink-receiving layer consisting of a pigment, a binder, and a cationic substance; and a surface layer consisting of cationic ultrafine particles. Hirose exemplifies the ultrafine particles as two distinct species: first, as "silica subjected to a surface treatment with a compound containing some of the cationic metal oxides or metal atoms as described above," which were "magnesium, calcium, aluminum, zinc, chromium, iron, copper, tin, lead, and manganese," and second, as "silica subjected to a surface treatment with an organic compound having both amino group or quaternary ammonium group thereof and functional group having reactivity to a silanol group on the surface of the silica." See col. 4, lines 18-25. The Examiner also states that the cationized silica is formed either by treating it with a metal oxide "or" by

treating it with organic compound having both an amino or quaternary ammonium group and a functional group. See Office Action, page 5.

*Abe*

Abe discloses an ink-jet recording sheet comprising a support and ink receiving layer wherein the ink receiving layer contains a cation-modified non-spherical colloidal silica. The silica is cation-modified by coating the silica with a hydrous metal oxide such as hydrous aluminum oxide, hydrous zirconium oxide, or hydrous tin oxide as carried out by the methods in Alexander. See col. 2, lines 48-58. The Examiner describes Abe in the same fashion. See Office Action, page 5.

*Alexander*

Alexander discloses the methods of making positively charged particles of dense silica by mixing them with a basic salt of a metal having a valence of 3 to 4. See col. 1, lines 11-16; col. 2, lines 21-26. The Examiner also states the Alexander teaches the “forming [of] a stable aquasol of positively charged coated silica particles.” See Office Action page 5, last paragraph.

*Santo*

Santo discloses a printing medium comprising a substrate and an ink receiving layer. The ink receiving layer comprises an alumina hydrate surface-treated with a coupling agent. See Abstract. The coupling agent is preferably a silane coupling agent. See col. 7, lines 22-24. The Examiner also states that Santo teaches “an alumina hydrate surface-treated in an aqueous dispersion with a silane coupling agent . . .” See Office Action, page 7.

*Claims 1-22*

The Examiner has rejected claims 1-22 using a combination of these references. Emphasis on independent claims 1 and 15 is provided.

Claim 1. A method of treating silica in an aqueous environment, comprising:

- a) dispersing silica particulates in an aqueous environment to form an aqueous dispersion;

- b) reversing the net charge of the surface of the silica particulates from negative to positive using a surface activating agent, thereby forming surface-activated silica particulates dispersed in water; and
- c) contacting the surface-activated silica particulates with organosilane reagents to form reagent-modified and surface-activated silica particulates.

Claim 15. A method of preparing an ink-jet media sheet, comprising:

- a) dispersing silica particulates in an aqueous environment to form an aqueous dispersion;
- b) reversing the net charge of the surface of the silica particulates from negative to positive using a surface activating agent, thereby forming surface-activated silica particulates dispersed in water;
- c) contacting the surface-activated silica particulates with organosilane reagents to form reagent-modified and surface-activated silica particulates;
- d) preparing a porous coating composition including the reagent-modified and surface-activated silica particulates and an organic binder; and
- e) coating the porous coating composition on a media substrate.

Each independent claim proscribes a method that contains at least 3 distinct steps. First, the silica is dispersed in water. Second, the silica's negative charge is reversed by a surface-activating agent forming a surface-activated silica. Third, the surface-activated silica is then reacted further with an organosilane reagent to form a reagent-modified, surface-activated silica. Dependent claims 2-4 vary the order of the first two steps of the method but the reagent-modifying step is always performed such that the organosilane reagent is attached to the surface-activated silica, which requires that the surface-activated silica exist before or as the organosilane reagent is attached.

The Examiner has combined 4 references focusing on specific elements of the present invention such as cationic silica, alumina, quaternary ammonium group, aminoethoxysilane, hydrous metal oxide, etc. However, the Examiner has not shown how the combination of references would provide the steps provided in the independent claims of the present invention.

Hirose teaches the treatment of silica with metal oxide or organic groups for use in a printing medium. Hirose does not teach a sequence of steps that includes cationizing the

silica and modifying the cationized silica with an organosilane reagent as required by independent claims 1 and 15. Abe also teaches the use of cation-modified silica in ink-jet sheets by specifically referring to Alexander for the method of cationizing the silica.

Alexander was filed in 1956 and outlines a basic reaction scheme for cationizing silica in an aqueous solution. However, neither Abe nor Alexander teaches the steps of cationizing silica and also modifying the cationized silica with an organosilane reagent as required by the present invention. Further, Santo uses a aluminum hydrate dispersion instead of a silica dispersion as required by the present method.

None of the references cited by the Examiner teach the steps of cationizing the surface of the silica and modifying the silica with an organosilane reagent. In fact, nothing in the references suggest the advantage of performing these steps as outlined in independent claims 1 and 15. The Applicant contends that the Examiner has not shown that a combination of these references discloses the method of the present invention. Furthermore, the Applicant contends that any such combination would be improper since reaction methods are generally specific and not interchangeable. In any organic chemical reaction, great care must be taken in order to ensure that the starting materials are compatible with the reaction scheme. Varying starting material or solvents can have negative effects on the resulting product in any given scheme. For example, Grignard reactions are notoriously dangerous as they can be highly exothermic and can explode if the reaction conditions are not closely tailored for the starting materials. Additionally, if water is present in the reaction mixture, it will hinder if not completely eliminate any resulting product. Likewise, in the present reaction method, though not dangerous, a failure to perform this precise method could result in mixing the functional groups of the organosilane reagents with metal oxides or aluminum hydrates, which may not be compatible, nor would it lead to the reagent-modified and surface-activated silica particulates required by the claims.

Therefore, the Applicant submits that claims 1 and 15 are novel and respectfully requests that the Examiner withdraw the rejections. Additionally, since claims 2-14 and 16-22 depend on either claim 1 or 15, the Applicant submits that these dependent claims are novel as well, and respectfully requests that the rejections as to these claims also be withdrawn.

CONCLUSION

Because the combination of references does not teach the method of the present invention, the Applicant respectfully asserts the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness. Additionally, because there is not adequate motivation or suggestion to modify or combine the references, the Applicant respectfully asserts any such combination would be improper. Therefore, the pending claim set should be allowable for these additional reasons. Reconsideration is respectfully requested.

In view of the foregoing, Applicants submit that claims 1-22 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone W. Bradley Haymond (Registration No. 35,186) at (541) 715-0159 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 5th day of May, 2006.

Respectfully submitted,

  
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